



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/698,198	10/31/2003	Alex Ka Tim Poon	NRCAP019	9979
26541	7590	10/06/2004	EXAMINER	
RITTER, LANG & KAPLAN 12930 SARATOGA AE. SUITE D1 SARATOGA, CA 95070			MILLER, PATRICK L	
			ART UNIT	PAPER NUMBER
			2837	

DATE MAILED: 10/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/698,198	Applicant(s) POON ET AL.	
	Examiner Patrick Miller	Art Unit 2837	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,5-12,14,15 and 18-21 is/are rejected.
- 7) ☒ Claim(s) 2-4,13,16,17 and 22-30 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>10312003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: see bullet(s) below. Appropriate correction is required.
 - Page 5, lines 3 and 4, insert "Prior Art" wording.

Claim Objections

3. Claims 1-11, 14, and 22-30 are objected to because of the following informalities: See bullets below. Appropriate correction is required.
 - Claim 1 recites, "an interior space substantially within the first stage." By definition, arranging the first stage with an interior space, means that the interior space is within the first stage. Delete, "substantially within the first stage."
 - Claim 14 recites, "the second actuator is arranged to drive the first stage along a second axis." From claim 12, the second actuator does not drive the first stage.

Art Unit: 2837

- Claim 22 recites, “an actuator arrangement” (line 9 of claim). It is unclear whether this actuator is the same as that recited in lines 4 and 5. The Examiner suggests changing to “a second actuator.”
- Claim 25 recites, “the actuator.” It is unclear to which actuator the Applicant is referring. Please clarify.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

4. Claims 1, 5, 6, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirai et al (4,667,139).

- With respect to claims 1, 12, and 14, Hirai et al disclose a stage apparatus comprising: a first stage (Fig. 1, #7), the first stage arranged to define an interior space (Fig. 1, space surrounding #10); a first actuator that is positioned substantially within the interior space (Fig. 1, #10), and the first actuator drives the first stage in a first direction (Fig. 1, #10 drives #7 in the x direction).
- With respect to claims 6, 12, and 14, Hirai et al disclose a second stage assembly that includes a second stage and a second actuator that is supported by the first stage assembly (Fig. 1, #3 and #11); and the second actuator drives the second stage in a second direction (Fig. 1, #11 drives #3 in the y direction).

- With respect to claim 5, Hirai et al disclose the first actuator driving the first stage along the positive and negative side of the x-axis; therefore, the first stage (Fig. 1, #7) is driven through its center of gravity.
5. Claims 1, 5, 8-12, 14, 15, 18, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Trumper et al (5,699,621).
- With respect to claims 1, 12, and 14, Trumper et al disclose a stage apparatus comprising: a first stage (Fig. 1, #12), the first stage arranged to define an interior space (Fig. 2, internal space is interpreted as the inner space from #12 to the base, Fig 1, #8); a first actuator that is positioned substantially within the interior space, and the first actuator drives the first stage in a first direction (Fig. 2, #22 and #'s 26 are the actuators in the interior space as defined above, and drive the first stage in the x direction).
 - With respect to claims 12 and 14, Trumper et al disclose a second stage assembly that includes a second stage and a second actuator (Fig. 1, # 14 and #48); and the second actuator drives the second stage in a second direction (Fig. 1, #48 drives #14 in the y direction).
 - With respect to claim 5, Trumper et al disclose the first actuator driving the first stage along the positive and negative side of the x-axis; therefore, the first stage (Fig. 1, #12) is driven through its center of gravity.
 - With respect to claims 8 and 15, Trumper et al disclose the first stage is a coarse stage and the second stage is a fine stage (col. 8, lines 5-10), and the fine stage supports the object to be scanned (Fig. 1, fine stage #14 supports stage #12, which supports the object to be scanned, #20).

Art Unit: 2837

- With respect to claims 9-11, 18, 20, and 21, Trumper et al disclose the stage apparatus used with an exposure apparatus, and a wafer or device is manufactured using the exposure apparatus (col. 1, lines 18-20; col. 5, lines 38-39; col. 8, lines 5-7).
6. Claim 1, 5-12, 14, 15, and 18-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Poon et al (6,281,655).
- With respect to claims 1, 12, and 14, Poon et al disclose a stage apparatus comprising: a first stage (Fig. 1, #18), the first stage arranged to define an interior space (Fig. 9, interior of #18); a first actuator that is positioned substantially within the interior space, and the first actuator drives the first stage in a first direction (Fig. 9, #36 inside #19 and drives in y direction).
 - With respect to claim 5, the first actuator drives the first stage through a center of gravity associated with the first stage (Fig. 9, #128 includes the center of gravity for the first stage).
 - With respect to claims 6, 12, and 14, Poon et al disclose a second stage assembly, including a second stage and a second actuator (Fig. 4, #34), the second stage assembly is supported by the first stage assembly (Fig. 9, first stage supports the second stage via #'s 130 and 148), and the second actuator drives the second stage in a second direction (col. 9, lines 38-39; moves in the x direction).
 - With respect to claim 7, an interface plate is coupled to the first and second stage assemblies (Fig. 9, #130 supports second assembly along with #148).
 - With respect to claims 8 and 15, the first stage is a coarse stage and the second stage is a fine stage, with the fine stage supporting the object to be scanned (col. 3, lines 45-67).

Art Unit: 2837

- With respect to claims 9-11, 18, 20, and 21, Poon et al disclose the stage apparatus used with an exposure apparatus, and a wafer or device is manufactured using the exposure apparatus (col. 3, lines 52-60).
- With respect to claim 19, Poon et al disclose using the exposure apparatus with an extreme ultraviolet lithography system (col. 15, lines 3-36).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Trumper et al (5,699,621) as applied to claims 12 and 18 above, and further in view of Williams (6,353,271).

- Trumper et al do not disclose the exposure apparatus being part of an extreme ultraviolet lithography system.
- Williams discloses an x-y positioning stage apparatus that is used with an extreme ultraviolet lithography system (col. 4, lines 35-56). The motivation to use the apparatus of Trumper et al in an extreme ultraviolet lithography system is to provide the advantage of more precise stage placement because scanning (the Trumper et al system scans), as opposed to exposure of the entire reticle at once, allows for the projection of reticle patterns that exceed in size that of the image field of projection lens (col. 1, lines 55-58).

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to use the apparatus of Trumper et al in an extreme ultraviolet lithography system, thereby providing the advantage of allowing for the projection of reticle patterns that exceed in size that of the image field of projection lens, as taught by Williams.

Allowable Subject Matter

8. Claims 22-30 would be allowed once the minor informalities are corrected.
9. The following is a statement of reasons for the indication of allowable subject matter:
 - With respect to claim 22, the Prior Art does not disclose an apparatus with first and second stage assemblies, where the first stage has in interior section and a first actuator is arranged within the interior section, and the first actuator is substantially unexposed to a vacuum environment; and the second stage is arranged within a vacuum chamber and exposed to the vacuum environment.
10. Claims 2-4, 13, 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
 - With respect to claims 2 and 13, the Prior Art does not disclose a counter mass arrangement that is within the interior space of the first stage and coupled to the first actuator.
 - With respect to claim 16, the Prior Art does not disclose a stage device with the limitations of claim 12, and the additional limitation of the second stage is arranged

Art Unit: 2837

within a vacuum environment and the first actuator is arranged within a non-vacuum environment.

Conclusion

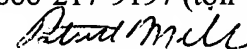
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 571-272-2070. The examiner can normally be reached on M-F, 8:30-5:30.

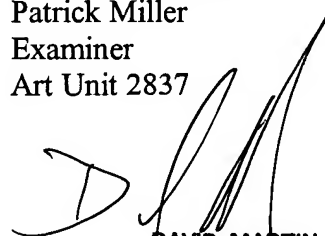
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on 571-272-2800 ext 41. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pm
September 30, 2004


Patrick Miller
Examiner
Art Unit 2837


DAVID MARTIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800